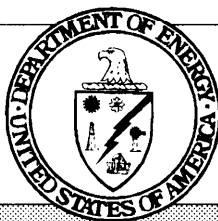
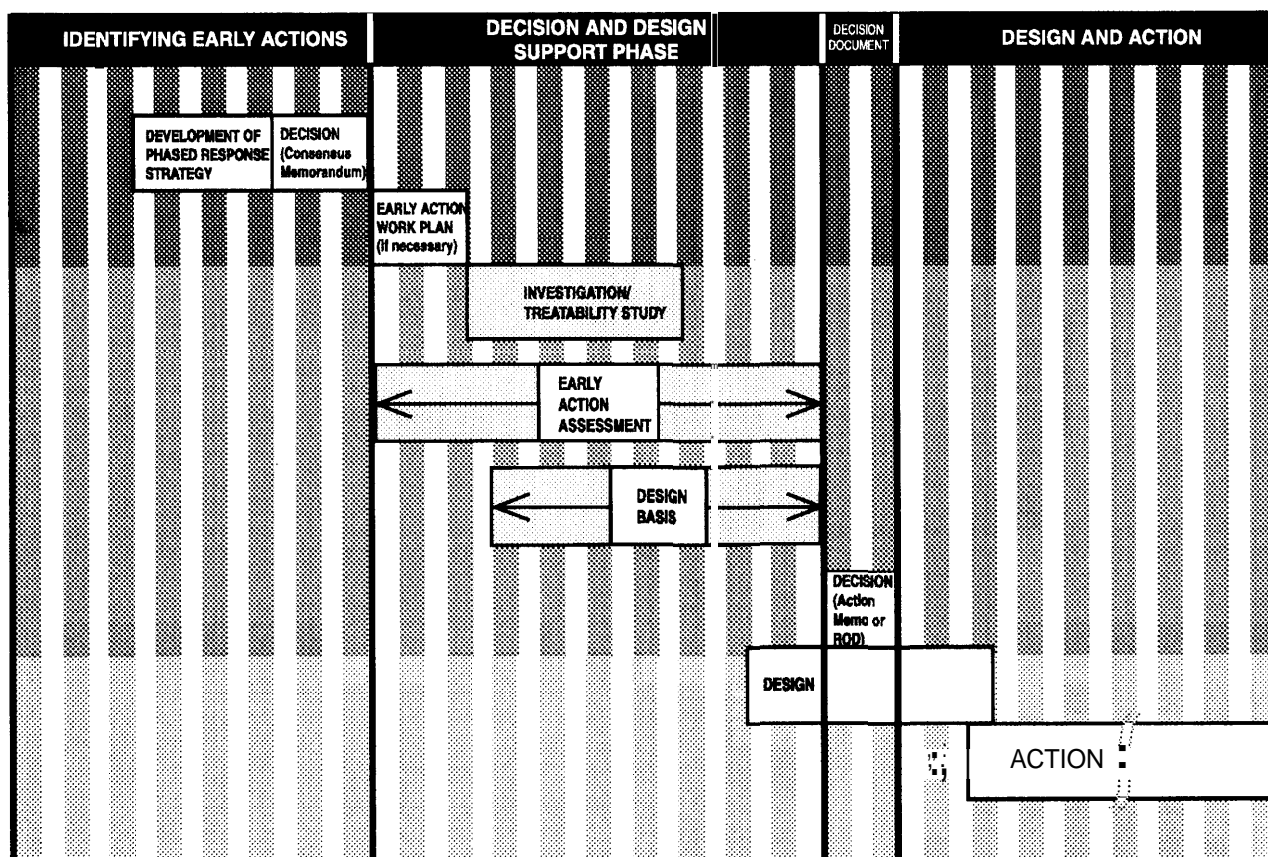


Environmental



Guidance

Phased Response/ Early Actions



U.S. Department of Energy
Washington, D.C.

Office of Environmental Activities
(EM-22)

Office of Environmental Policy & Assistance
RCRA/CERCLA Division
(EH-413)

Module 2

Contingent Removal Action Approaches

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● Conducting Extended Project Team Meetings, Revising Approach, and Gaining Consensus
● Documenting Consensus on Contingent Removal Action Criteria
● Integrating Contingent Removal Action Criteria Into OU-Specific Phased Response Strategy

Module 2 Contingent Removal Action Approaches

Background

Many of the site problems at Department of Energy (DOE) facilities are sufficiently unique that each needs to be investigated separately. However, it is also true that some types of site problems at DOE facilities occur many times with only slight variations (e.g., isolated surficial radioactive hot spots). For such recurrent site problems, developing standard approaches can make sense.

The Environmental Protection Agency (EPA) has developed two concepts to address recurrent site problems: presumptive remedies and generic approaches (EPA, 1993). EPA defines a presumptive remedy as a suite of remediation technologies or approaches that are pre-determined to be the likely logical remediation decision for a given site problem. By establishing presumptive remedies, much money can be saved in investigating sites and evaluating alternatives, and remediation can be streamlined. EPA has identified several presumptive remedies on the basis of their selection in Records of Decision (RODS) and implementation at waste sites around the country. An example is use of capping as the presumptive remedy for dealing with municipal landfills (citation).

Generic approaches are similar to presumptive remedies, except that generic approaches are established as being appropriate on a local level (e.g., for multiple similar waste sites at a DOE facility) rather than on a national level. Presumptive remedies do not exist for most of the site problems at DOE facilities. For DOE, establishing generic approaches specific to a single facility can be advantageous. Use of generic approaches for early actions can allow DOE to achieve efficiencies within a facility, similar to using presumptive remedies on a national scale. If a site problem can be expected to arise frequently (perhaps six or more times) serious consideration should be given to developing a generic approach. DOE is developing detailed guidance on the general development and implementation of generic approaches.

This module focuses on one application of generic approaches. Specifically, development of contingent removal action approaches.

Contingent removal actions generally require predefine and agreed upon triggering *criteria*, planning and decision *procedures*, and appropriate technical *approaches*. To develop a contingent removal action, each DOE facility should establish these criteria, procedures, and approaches with assistance and consensus of the extended project team. These criteria, procedures, and approaches are *defined* at the facility-wide level, *integrated* into the phased approach planning at the operable-unit (OU) level, and *implemented* at the specific site-problem level.

Similar to the use of presumptive remedies, removal actions streamline remediation by reducing delays in the paperwork and documentation required to initiate action. When a site problem (e.g., newly identified hot spot or newly discovered potential for a significant release in the near-term) meets the pre-established *criteria*, the DOE project manager or designee can implement the agreed upon removal *procedures* with one of the agreed upon technical *approaches* without need for ad hoc approval of the extended project team. This approach is consistent with both the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (see Appendix A) and EPA's guidance on phased response approaches (EPA, 1993).

A contingent removal action strategy at the facility level should begin as an internal DOE effort involving the DOE project manager or designee and the cognizant contractor project managers. The initial DOE contingent removal action strategy should evaluate and summarize the following:



Module 2 Contingent Removal Action Approaches (continued)

- Specific site problems that DOE believes are appropriate for removal actions
- Criteria that DOE believes are appropriate for triggering implementation of removal actions
- Procedures that DOE believes are appropriate for removal actions
- Strategies for integrating removal actions into individual OU phased approaches

The initial removal action approach then becomes a matter of consensus through extended project team and stakeholder meetings. This module provides guidance on developing agreements for developing removal actions and for integrating removal actions into individual OU phased response strategies.

Organization

Module 2 discusses the following:

- Determining types of site problems appropriate for contingent removal actions
- Determining implementation criteria for contingent removal actions
- Determining resultant contingent removal action procedures
- Conducting extended project team meetings, revising approach, and gaining consensus
- Documenting consensus on contingent removal action criteria
- Integrating contingent removal action criteria into OU-specific phased response strategy

In addition, more detailed information is provided in the following notes:

- Note A – Example Meeting Agenda for Discussion of a Contingent Removal Action Approach
- Note B – Example Text for Development of Contingent Removal Action Decision Rules
- Note C – Example Outline of Documentation for Contingent Removal Action Consensus

Sources

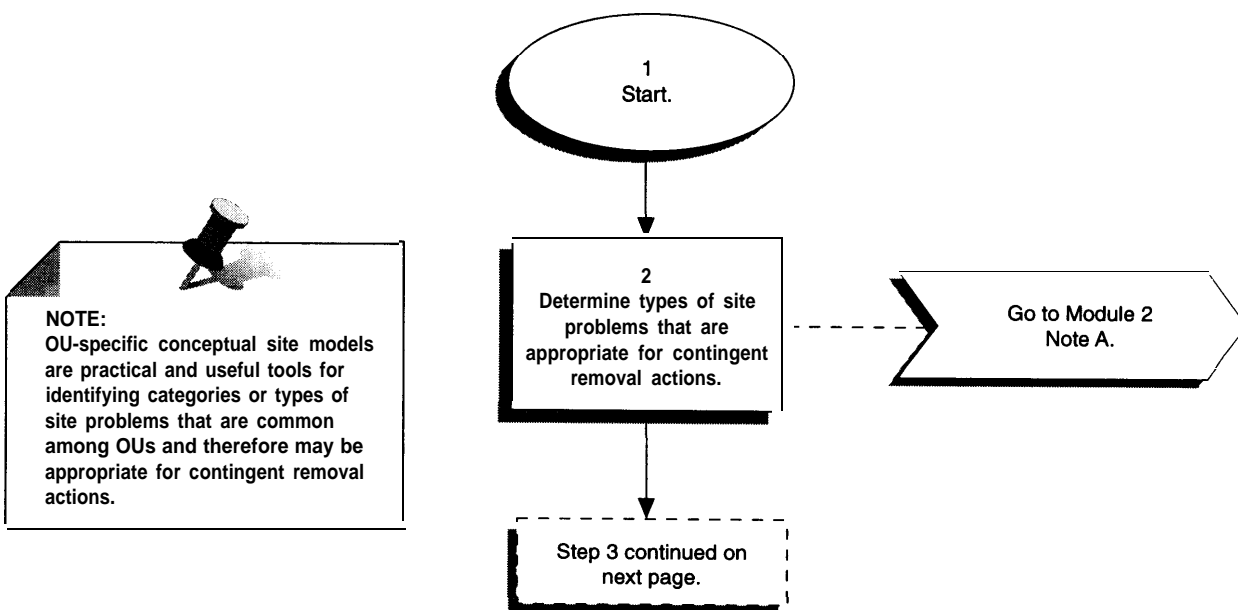
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2. U.S. EPA, March 1989, *Guidance on Non-NPL Removal Actions Involving Nationally Significant or Precedent-Setting Issues*, OSWER Publication 9360.0-19.
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Module 2 Contingent Removal Action Approaches (continued)

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Module 2 Contingent Removal Action Approaches



Module 2 Contingent Removal Action Approaches (continued)

Step 1. Start.

Step 2. Determine types of site problems that are appropriate for contingent removal actions. The goal of this step is to identify specific types of site problems for which contingent removal actions could be used. Available information is used for this evaluation. For example, available facility information and any OU-specific conceptual site models developed as part of a comprehensive Remedial Investigation/Feasibility Study (RI/FS). A sitewide team will most often be appropriate for planning contingent removal actions, which can then be incorporated into an OU-specific phased response strategy.

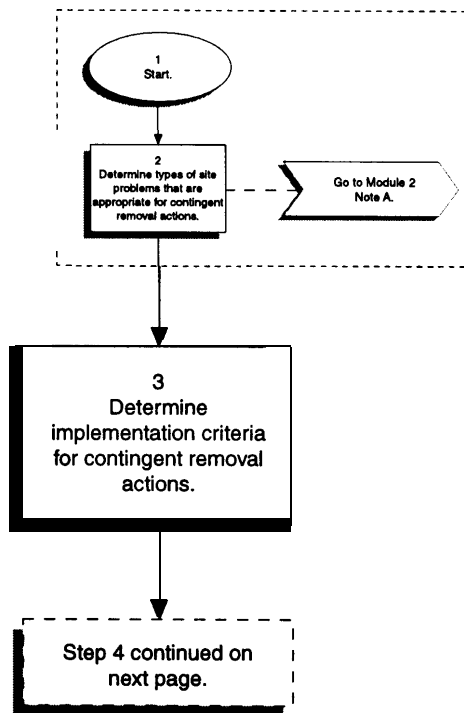
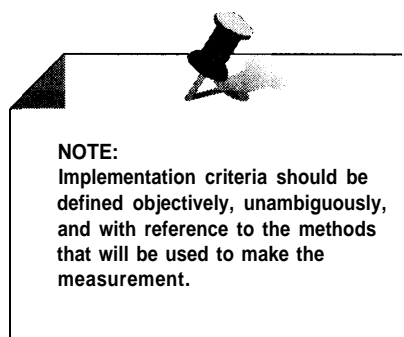
The approach begins with establishing a list of target types of site problems and acceptable approaches (e.g., radioactive soil hot-spot removal). Factors that can support or eliminate certain types of site problems as candidates for contingent removals include: (1) likely frequency of the problem, (2) costs to undertake action to address the problem and to delay action, (3) urgency of the problem, (4) health and safety issues for workers conducting the response, (5) availability of technology to respond or capacity of needed waste management, and (6) benefit realized from taking action (cost savings, time savings, risk reduction).

Using these factors to evaluate the appropriateness of developing a hot-spot contingent removal action might result in the following analysis:

- Hot spots of radiological contaminants (e.g., ²⁴¹Pu) above 5 pCi/g in the top 6 in. of soil are expected to be encountered frequently.
- The costs to undertake a typical hot spot removal are approximately \$1,500 per yd³ (including in-field sampling, excavation, packaging, and waste management costs). These finds are available from an existing activity data sheet (ADS) and work package.
- These hot spots are often located in areas where workers are required to conduct other activities, thereby posing a risk if the hot spots are not removed.
- No special health and safety considerations are expected to be required to ensure a safe response for workers.
- Compliant storage capacity is currently available for approximately 6,000 yd³ of material. Site workers trained in emergency response are available and can be mobilized within 24 hr to conduct the removal.

This evaluation process (not a detailed engineering evaluation) is similar to EPA's presumptive remedy evaluation process (EPA, 1993), which emphasizes the use of readily available information and the application of criteria that delineate key advantages and disadvantages of responding. The evaluation at the facility-level is most appropriately conducted by DOE and contractor personnel with OU-specific knowledge (e.g., DOE project manager or designee and cognizant contractor project managers) and most effectively developed through a series of well-focused meetings that integrate the regulatory agencies, as appropriate, to ensure their concerns are addressed. Module 2, Note A provides an example meeting agenda and list of attendees.

Module 2 Contingent Removal Action Approaches (cont.)



Module 2 Contingent Removal Action Approaches (continued)

Step 3. Determine implementation criteria for contingent removal actions. Once types of site problems are identified as likely candidates for contingent removal actions, the sitewide team that is convened to develop contingent removal action approaches needs to establish specific criteria that can serve as agreed upon triggers for taking the action and to ensure that potential actions have well-defined boundaries. Criteria are generally expressed in terms of decision rules (or if-then statements) that define when removal actions will be undertaken. An example criterion is: *"Concentrations of thorium above 15 pCi/g in the top 6 in. of soil in any 100 ft² area measured using the Soil Screening Facility Methodology will be removed."*

Criteria should be defined unambiguously, objectively, and with reference to methods that will be used to make the measurement. An example of poor definition is levels of thorium in soil that present a large risk." Several factors need to be evaluated when setting criteria. The most obvious is the urgency or risk posed by the problem. Other factors to be considered that might modify risk-based considerations include (1) the resulting size or scope of the removal (e.g., whether areas are likely to be small enough in scope to be handled without elaborate investigation and planning and whether interim wastes can be managed); (2) the degree of understanding that exists (e.g., whether problems are understood well enough to be undertaken with reasonable assurance of success); (3) cost (e.g., whether removals are affordable within existing funding structures); and (4) time (e.g., whether the removal can be accomplished in a reasonable amount of time).

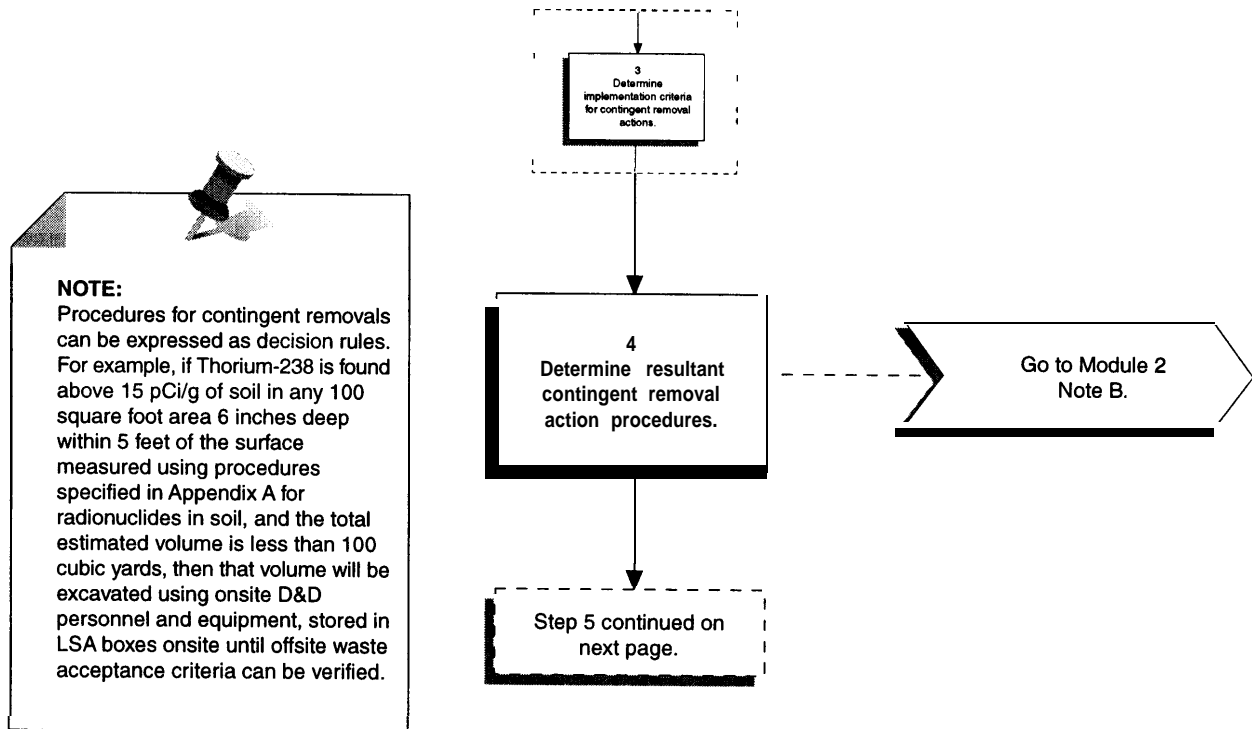
Consistent with the NCP criteria, urgency is likely to be a major factor in determining the need for a response to a threat or release. Urgency should be indicated in the criteria by including concentration levels that indicate current risk (e.g., worker health and safety), threat of a release, and certainty of the existence of a release. Because removal actions focus on urgent situations, concentration levels in the criteria should be set at levels where clear risks exist (e.g., 1×10^3 or 1×10^4 risk levels), rather than levels analogous to final cleanup standards.

Appropriate concentration levels for criteria may be drawn from a variety of sources. They can be established using regulatory or guidance levels that indicate that action is warranted [e.g., proposed action levels in the draft Resource Conservation and Recovery Act (RCRA) Subpart S rule]; derived from accepted risk-based methodologies, equations, and assumptions [e.g., preliminary remediation goals (PRGs)]; established on the basis of anticipated exceedances of acceptable exposure levels from health and safety procedures or plans; or based on obvious visible evidence (e.g., drums with rust on more than 10 percent of the surface area). Agreement about the basis for urgency criteria will be a major focus in the planning process for contingent removal actions.

Scope criteria consider the extent of the response that would result. For example, a contingent removal action may be appropriate only within defined scope limits (e.g., maximum amount of soil that might be removed within available financial resources or within certain time frames). Scope often is a bounding factor for contingent removal actions, to ensure that the removals remain within NCP limits (i.e., 6 months planning) and practical limits that exist for a site. An example of a removal criterion modified by scope is: *"Concentrations of thorium above 15 pCi/g in the top 6 in. of soil measured using the Soil Screening Facility Methodology will be removed, if less than 25 yd³ of material is present."*

Modifications to criteria can also result from the factors of *understanding*, *cost*, and *time*. Examples of how these factors could modify the example criterion are shown below:

Module 2 Contingent Removal Action Approaches (cont.)



Module 2 Contingent Removal Action Approaches (continued)

- *"Concentrations of thorium above 15 pCi/g in the top 6 in. of soil measured using the Soil Screening Facility Methodology will be removed if samples confirm that no hazardous wastes or PCBS are present."* An example where sufficient waste characterization is needed to ensure that the materials can be placed in a storage unit only permitted to receive low-level radioactive waste.
- *"Concentrations of thorium above 15 pCi/g in the top 6 in. of soil measured using the Soil Screening Facility Methodology will be removed if total costs for the work are within available funding."* An example where DOE will conduct the activity only if no new funding request is needed.
- *"Concentrations of thorium above 15 pCi/g in the top 6 in. of soil measured using the Soil Screening Facility Methodology will be removed if work can be completed within 30 days from discovery of the problem."* An example where DOE and the regulators may agree on a reasonable time limit for the work; after this time period, the extended project team might agree that public notice of the work is desirable.


Step 4.

Determine resultant contingent removal action procedures. Once a general type of site problem (e.g., surficial radioactive hot spots) has been identified as a candidate for contingent removal actions (Step 2), and criteria have been established for identifying appropriate specific cases (Step 3), the sitewide project team should specify the procedures that the contingent removal action will entail. These procedures may need to include the following:

- Technologies to be used and the conditions under which each can/should be used
- Responsibilities and authorities
- Contracting mechanisms, if any, to be used in conducting the work
- Counter-indications to continuing or completing the removal action
- Generic design for the removal that can be modified to fit the circumstances of a particular site problem

The range of available waste management technologies is currently limited for many problems that exist at DOE sites. The primary emphasis of the action for contingent removals will be on immediate risk reduction techniques rather than on making final decisions about treatment and disposal options. However, some consideration of the technical methods for accomplishing even contingent removals likely is warranted. Considerations during this step are decisions about excavation equipment, characterization and monitoring equipment, waste transport mechanisms, and waste management methods (e.g., types of storage containers).

For many types of problems, only one technology may be available given the constraints on contingent removals agreed upon by the extended project team and imposed by the NCP. Some decisions about methods and technologies can be left until after a problem is discovered, or some decisions may already be made in existing site-specific procedures. For example, protocols for using radiological detection instruments for soils may be agreed



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Module 2 Contingent Removal Action Approaches (continued)

to and currently in use. In these situations, spending any resources on further discussion is unnecessary; rather, focus should be on technology issues where multiple options are available or where members of the planning team have concerns.

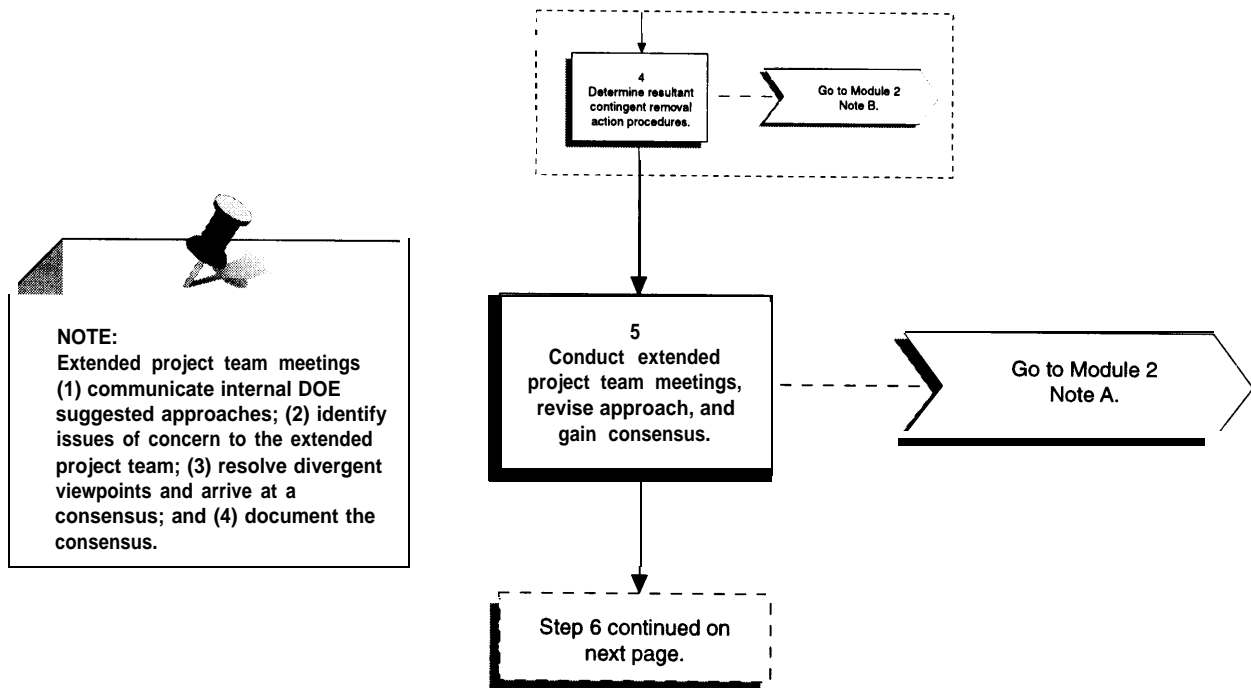
Planning should include defining roles and responsibilities and, if appropriate, for addressing procurement issues that will exist when implementing contingent removal actions. Roles and responsibilities should be clearly defined at this stage. Specific issues (e.g., which organizations will conduct the actions or how contractors will be selected to implement the removals) should be addressed to avoid later delays. For example, part of the procedures established for a contingent removal of a certain type could specify that facility emergency response staff will be used to excavate hot spots. Planning also must assess how auxiliary organizations (e.g., waste management or health physics) will be notified to provide staff to support the contingent removal. Ideally, representatives from all affected organizations should be involved as needed in planning contingent removal actions.

Finally, technical procedures, plans (e.g., health and safety), and generic design documents should be developed separately by DOE and DOE contractor staff. Existing procedures, plans, and design documentation can be relied on extensively and can even be incorporated by reference in most instances. Time-critical removals, whether undertaken as contingent removals or as separate ad hoc removals, should not require wholly separate plans, procedures, and technical documentation.

As with the criteria, the procedures for implementing contingent removals are often best expressed as decision rules. This results in clear definition of linkages among site problems, implementing criteria, and resulting procedures and also ensures effective communication of the contingent removal action concept to stakeholders and any contractors responsible for implementing contingent removal actions. For example:

If Thorium-238 is found above 15 pCi/g of soil in any 100 ft² area 6 in. deep in the top 5 ft measured using procedures specified in Appendix A for radionuclides in soil, and the total estimated volume is less than 100 yd³, then that volume will be excavated using onsite D&D personnel and equipment, and stored in LSA boxes onsite until offsite waste acceptance criteria can be verified.

Module 2 Contingent Removal Action Approaches (cont.)



Module 2 Contingent Removal Action Approaches (continued)

or

	Criteria	Action
²³⁸ Th in surficial soils in the top 5 feet above criteria.	(1) ²³⁸ Th concentration greater than 15 pCi/g in any 100 ft ² area, 6 inches deep measured using procedures in Appendix A, and (2) Estimated volume less than 100 yd ³ .	(1) Excavation using onsite D&D personnel and equipment, (2) Onsite interim storage in disposal boxes, and (3) Verification of meeting offsite disposal waste acceptance criteria.

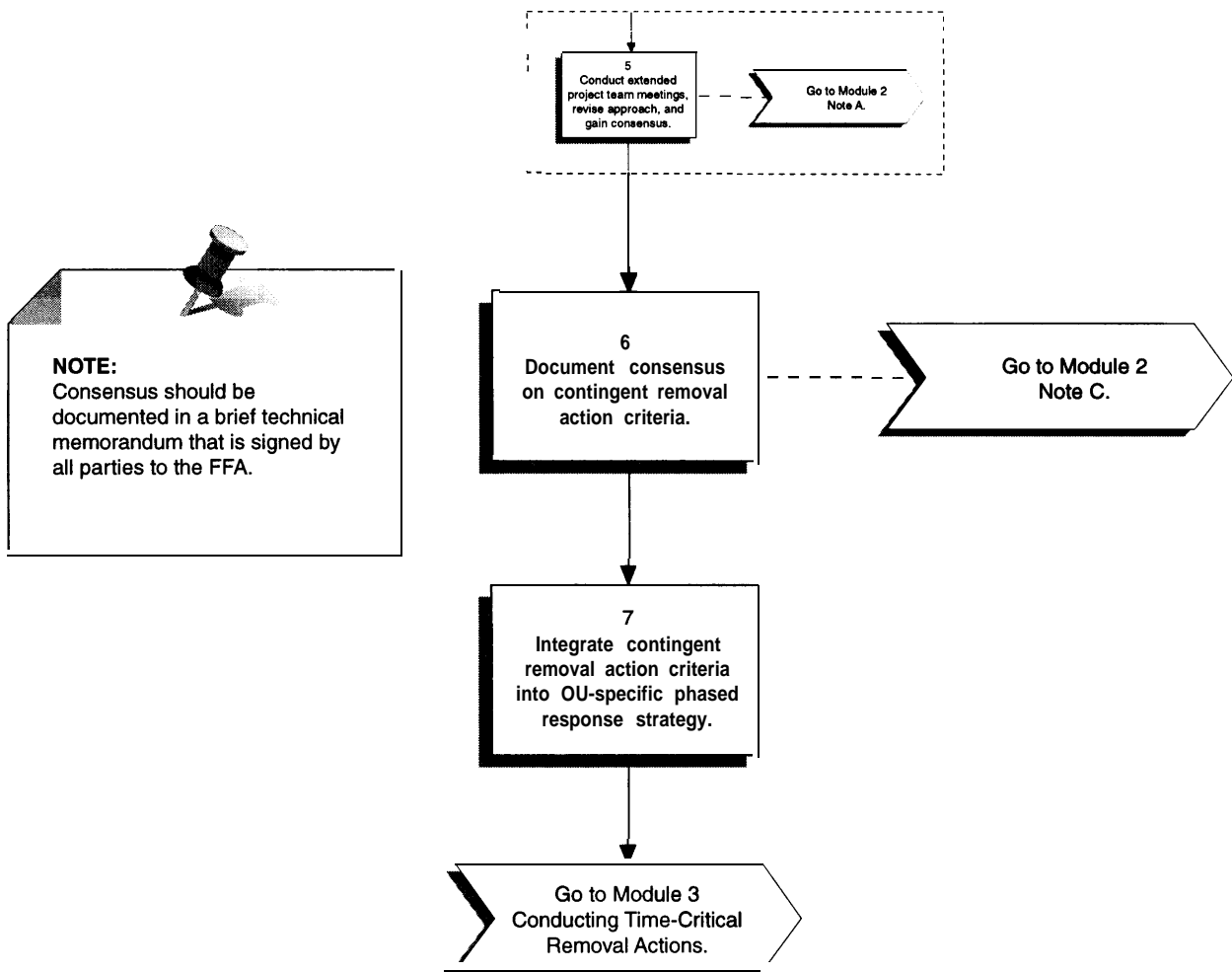
Module 2, Note B provides additional detail on defining contingent removal action decision rules.

Step 5. Conduct extended project team meetings, revise approach, and gain consensus. As contingent removal actions are planned, a series (as many as five or ten) of well-focused meetings are effective forums for achieving consensus. The meetings are intended (1) to communicate initial approaches developed internally by DOE and its contractors, (2) to identify issues of concern to the extended project team, (3) to resolve divergent viewpoints and arrive at a consensus approach to contingent removal actions, and (4) to document the consensus approach in a technical memorandum that can be incorporated into a phased response strategy.

Coordination of the meetings is DOE's responsibility as the lead agency. For example, the first meeting should be used to present DOE's initial approach to contingent removal actions and the rationale used in its development. Distributing written summaries, tables, and figures of DOE's initial approach can facilitate and supplement extended project team understanding. Module 2, Note A provides guidance on possible agendas and attendees.

Divergent viewpoints are part of this process. Facilitation (e.g., formal use of partnering techniques, use of mediator) can be used to reach agreement on how DOE's initial approach can be modified to meet extended project team expectations. The goal of the extended project team meetings is to document consensus. Because the meetings likely will be held over several days, recording points of consensus or divergence is critical. Such "working notes" form the basis for the technical memorandum used to document final consensus.

Module 2 Contingent Removal Action Approaches (cont.)



Module 2 Contingent Removal Action Approaches (continued)

Step 6. Document consensus on contingent removal action criteria. The extended project team should document the scope and details of the consensus developed for each type of contingent removal. A brief technical memorandum should be developed and agreed upon by all parties to the FFA. The memorandum should cover each of the following topics:

- Type(s) of site problems and the criteria used to identify site problems for a contingent removal action
- Limitations on use of contingent removal actions
- Responsibilities and authorities
- Technologies and approaches
- Regulatory requirements
- Contingencies
- Waste disposal
- Monitoring requirements
- Site closure
- Existing facility plans and procedures

Module 2, Note C provides an example outline of documentation for a contingent removal action consensus.

Step 7. Integrate contingent removal action criteria into OU-specific phased response strategy. As described in Module 1 (Phased Response Strategy), a phased response strategy should be developed for each OU. The phased response strategy identifies for each site problem in the OU the type of remedial approach that will be used (time-critical removal, non-time-critical removal, early remedial action, final remedial action). Once established, contingent removal approaches can be incorporated into phased response strategies. Contingent removal actions become just one more tool at the disposal of the DOE project manager or designee to move an OU quickly and efficiently to remediation. See Submodule 1.1, Development of a Phased Response Strategy, for additional information on developing phased response strategies.

Module 2 Notes on Contingent Removal Action Approaches

Note A.

Example Meeting Agenda for Discussion of a Contingent Removal Action Approach.

DOE's Field Offices are responsible for developing a contingent removal action approach while gaining regulatory agency consensus. DOE's Environmental Restoration (ER) manager for the facility should designate an individual to lead the effort for the facility or a subpart of the facility (e. g., OU). Module 2, Step 2 explains the characteristics of actions that are good candidates for a contingent removal action. This example agenda and list of attendees provides a starting point for establishing the meetings where initial candidates are identified and criteria, procedures, and approaches are first developed. The extended project team is integrated into this effort through a series of well-focused meetings.

The extended project team is composed of DOE and DOE contractors and subcontractor personnel as appropriate for specific technical matters, EPA, the state regulatory agency(ies), and other identified stakeholder groups that take an active role in Environmental Restoration (ER) decision making processes. By expanding the project team beyond the routine technical matters that can be addressed by DOE contractors, a more complete and authoritative team is assembled – a team that can decide important matters and move a project toward a mutually satisfactory end point more quickly and efficiently than can be accomplished when technical matters are separated from policy matters. Participation of the extended project team members is vital to the project when developing contingent removal criteria, procedures, and approaches.

The purpose of the extended project team meetings is to present to the non-DOE members the initial candidates for contingent removals, along with any preliminary criteria, procedures, approaches, and draft decision rules that have been developed in the internal meetings. Follow-on meetings are then focused on modifying the initial approaches and developing consensus. Desired outcome of the meeting(s) is:

- Agreement that contingent removals have a role to play in the ER program for the site
- Agreement on an initial list of types of removals that can be implemented as time-critical actions under a contingent removal action program
- Agreement in principle on the general form that the criteria, procedures, approaches, and decision rules should take in the final program documentation
- Agreement on action items that result from the meeting and a timetable for developing each type of contingent removal

Attendees

DOE ER Manager (perhaps only part of the meeting)
DOE lead for development of contingent removal actions
DOE OU project managers, as appropriate
DOE regulatory specialist
DOE lead for FFA issues
ER Contractor lead for development of contingent removal actions

Module 2 Notes on Contingent Removal Action Approaches (continued)

ER Contractor lead for development of contingent removal actions
ER Contractor OU project managers, as appropriate
ER Contractor regulatory specialist
EPA lead for ER at the site
Other EPA personnel at the discretion of EPA
State regulatory lead for ER at the site
Other state agencies as appropriate
Other state personnel at the discretion of the state agencies
Other stakeholders appropriate

- I. Background
 - A. Contingent removals
 - B. Type(s) of removals covered by the document
 - C. Site experience with similar removal actions
- II. Criteria and decision rule(s) for invoking a contingent removal action
- III. Approach(es) to be used in implementing a time-critical removal
 - A. Approved remediation technologies
 - B. Waste Management
 - C. Resources (e.g., contracting mechanisms, site personnel)
 - D. Organization/Responsibilities
 - E. Liaison with regulatory agencies and other stakeholders
 - F. Site closure/post removal responsibilities
- IV. Procedures
 - A. Planning and project management (generic work plan)
 - B. Contracting
 - C. Budgeting and funding
 - D. Health and Safety Plan
 - E. Sampling and Analysis (monitoring) Plan
 - F. Quality Assurance Project Plan
 - G. Risk assessment approach
 - H. Technical procedures governing the work

Module 2 Notes on Contingent Removal Action Approaches (continued)

Note B.

Example Text for Development of Contingent Removal Action Decision Rules.

Decision rules are if-then statements that define what action will be undertaken for a certain set of conditions. Decision rules for contingent removal actions are the crux of the agreement between the DOE facility and the regulators. They state in clear terms the conditions under which time-critical removal actions will be implemented without need for discussion between DOE and the stakeholders. The following examples can be used as starting points in developing decision rules for a site.

(If)

Radioactive hot spots can be addressed as time-critical removals under the following conditions:

- The contaminated soil does not exceed 15 ft in depth.
- The depth of the hot spot does not exceed 3 ft or any level that would require special considerations for worker safety during excavation.
- The total volume of soil to be removed does not exceed what can be contained in 50 drums.
- Storage capacity for the drummed waste is available in the Temporary Storage Facility (TSF) and addition of the removed waste will not cause the maximum allowed capacity of the TSF to be exceeded.
- The cost of the removal will not exceed \$200,000.
- The removal can be accomplished in no more than one calendar month, from the beginning of mobilization to the completion of the drumming of the waste.

(Then)

Under the above conditions, DOE will remove the hot spots through use of the most efficient means available. The hot spots will be removed by suitable means, packaged in drums, labeled in accordance with the requirements of the TSF, and stored in the TSF pending completion of the grout facility. Health and safety procedures will fulfill the requirements of the Contingent Removal Health and Safety Plan, suitably modified and augmented for the particular site being remediated, Site (radioactive) surveying, monitoring during the removal, and confirmation monitoring will be conducted in accordance with the Hot Spot Removal Procedures Manual developed for contingent removals. Waste packaging, labeling, handling, and storage will be in accordance with the TSF procedures and requirements.

Note: This decision rule includes scope, time, and cost criteria, but does not address urgency or understanding criteria. Any surficial hot spot is assumed to represent a sufficiently serious potential for harm; it should be removed by the most expeditious means possible unless it is large enough (e.g., greater than 50 drums) that it might be better addressed by stabilization, institutional controls, or other means until a permanent disposal option is available. A further assumption is that hot spots are a simple enough problem

Module 2 Notes on Contingent Removal Action Approaches (continued)

that they do not present special consideration on a case-by-case basis. Thus, the decision rule is not required to address levels of uncertainty acceptable in making go/no-go decisions in regard to hot spot removals.

Module 2 Notes on Contingent Removal Action Approaches (continued)

Note C.

Example Outline of Documentation for Contingent Removal Action Consensus.

Documentation of the program as it will be implemented is necessary once the contingent removal criteria, procedures, approaches, and decision rules have been developed for a particular type of removal (e.g., hot-spot removals at the applicable DOE site). The documentation does not have to be elaborate or extensive. With some notations of differences or exceptions, much of the procedures will be incorporated by reference to existing procedures. The key element of the documentation, other than the procedures, is the decision rule for invoking a contingent removal. This should have been covered in detail in the extended project team meeting and should be a matter of consensus among the stakeholders.

The following outline is illustrative only. The special needs of each site should dictate the level and organization of the documentation needed for a contingent removal program.

- I. Background
 - A. Contingent removals
 - B. Type(s) of removals covered by the document
 - C. Site history with similar removal actions
- II. Criteria and decision rule(s) for invoking a contingent removal action
- III. Approach(es) to be used in implementing a time-critical removal
 - A. Approved remediation technologies
 - B. Waste management
 - C. Resources (e.g., contracting mechanisms, site personnel)
 - D. Organization/Responsibilities
 - E. Liaison with regulatory agencies and other stakeholders
 - F. Site closure/post removal responsibilities
- IV. Procedures
 - A. Planning and project management (generic work plan)
 - B. Contracting
 - C. Budgeting and funding
 - D. Health and Safety Plan
 - E. Sampling and Analysis (monitoring) Plan
 - F. Quality Assurance Project Plan
 - G. Risk assessment approach
 - H. Technical procedures governing the work

